

plan B:altic – climate change and spatial development in urban regions of the Baltic Sea coast

Sonja Deppisch, Dr.-Ing.

Head research group plan B:altic

Urban Planning and Regional Development

HafenCity University Hamburg, Germany

Baltic Sea Parliamentary Conference, 26th August 2013



Overview

- 1. Climate change impacts on cities in the Baltic Sea basin**
- 2. plan B:altic and its specific science – practice collaboration**
- 3. Lessons for an uncertain and eventually surprising future**



1. Climate change impacts on urban complexes in the Baltic Sea basin*

- **Impacts differ due to the location** of the urban complexes, be they in the northern or southern part of the catchment, directly at the Baltic Sea coast or more inland.
- **Every urban complex is a unique mixture** of infrastructure and urban services, inhabitants, natural resources and green spaces, built structures, location, economic and societal factors - hardly possible to generalize the potential extent of climate change impacts from single-case studies



* review done for BACC II – Authors: **Deppisch S.**, Juhola S., Janßen H., Richter M.



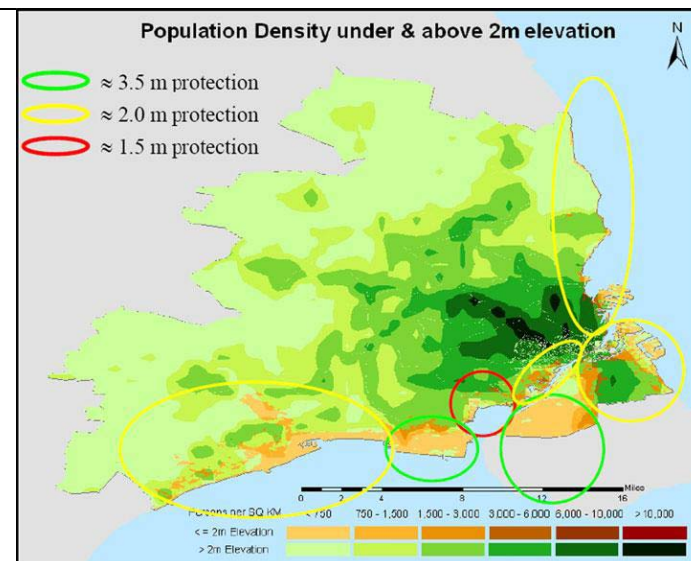
1. Climate change impacts on urban complexes in the Baltic Sea basin

3 KEY MESSAGES:

Message 1:

Climate change impacts, which affect technical infrastructure, building, housing and settlement structures most: sea level rise, extreme events like storm surges and the changing precipitation patterns, particularly flooding, caused by expected increase in heavy precipitation events.

As the net-sea level rise is expected to be higher in the southern Baltic Sea, **southern coastal cities will be more affected**



Population density of Copenhagen under and above 2 m elevation, and coastal protection, indicated by colored ellipsoids (green for 3.5m protection; yellow for 2.0m protection and red for 1.5m protection) in the period 1992–2002. (Hallegatte et al 2011)

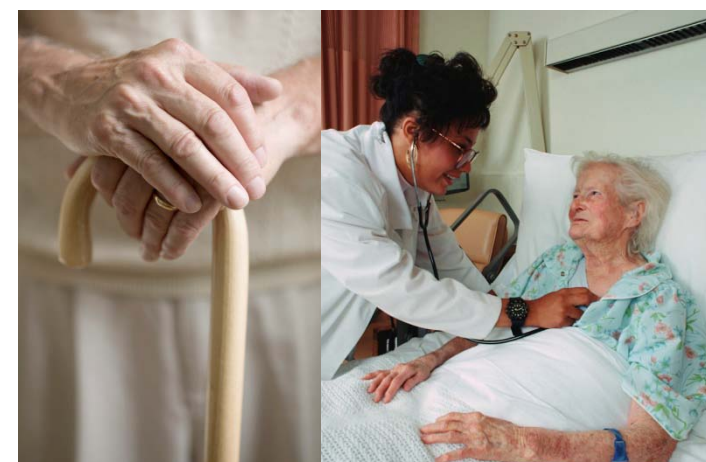


High tides of 226cm over sea level flood Inner Copenhagen – a high tide which could statistically come every 20 years in 2110 (City of Copenhagen 2011)

→ A. Climate change impacts on urban complexes in the Baltic Sea basin

Message 2:

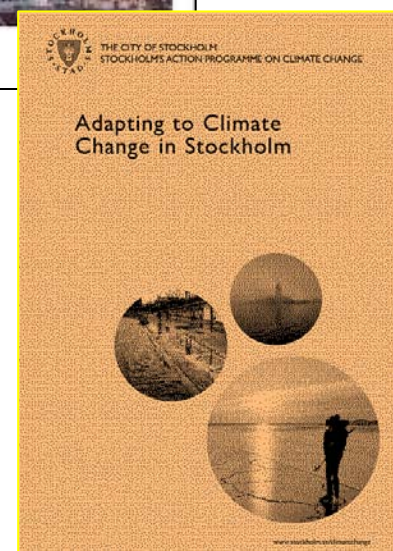
Vulnerability of the urban population differs between different groups of society, based on gender, age and further characteristics. Research shows that climate change can have immediate and lasting impacts on the urban population with the main stressors being severe weather events, thermal stress and changes in air quality.



→ 1. Climate change impacts on urban complexes in the Baltic Sea basin

Message 3:

As climate change will have manifold impacts on the socio-economic structures in the cities around the Baltic Sea, cities have taken steps to adapt to the impacts of these changes (e.g. Copenhagen, Helsinki, Stockholm, Rostock). Many cities have pursued strategies, which identify particular climate change impacts and are in the process of developing adaptation strategies.





2. plan B:altic* and its specific science – practice collaboration

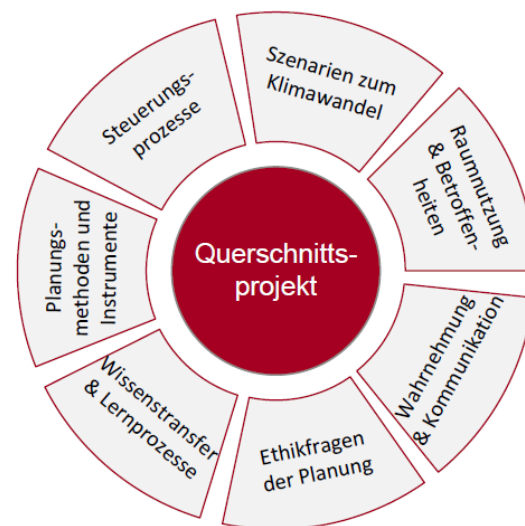
Funded by German national social-ecological research fund 2009 - 2014

Focus on urban and regional planning – how to deal resiliently with climate change impacts in urban regions of the Baltic Sea coast

Holistic inter-and transdisciplinary perspective

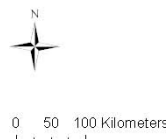
Based on a broad range of case studies of urban regions at the Baltic Sea coast, especially Rostock (Germany), Stockholm (Sweden) and Riga (Latvia), partly Copenhagen (Denmark)

We cross borders not only between scientific disciplines but also to practice => strong collaboration with practitioners from Rostock (Germany)



* the plan B:altic research group: Deppisch, S.; Albers, M.; Beichler, S.; Hagemeyer-Klose, M.; Hasibovic, S.; Richter, M.; Wibbeling, P.

➔ **2. plan B:altic and its specific science – practice collaboration**



Method of science – practice collaboration: strategic scenario planning (2010 – 2012; 3 main **workshops**), involving around **40 key stakeholders** (politics, economy, environmental and planning administration, civil society), close co-operation within an established **core working group** (practitioners from urban and regional administration and scientists)



2. plan B:altic and its specific science – practice collaboration

Method to cope with **uncertainties, potential states of not knowing and surprising events** related to climate change and with **complexity** of possible future developments

Both integrated: **impacts of climate** change (regional climate change scenarios of IPCC) and **future developments of society and of land-use**

Participatory process that can facilitate the local society in their **adaptation efforts, multiple viewpoints** and **societal knowledge** can be integrated

Platform for **exchange** and integration of different forms of **knowledge (scientific, lay or informal)** relevant for adaptation

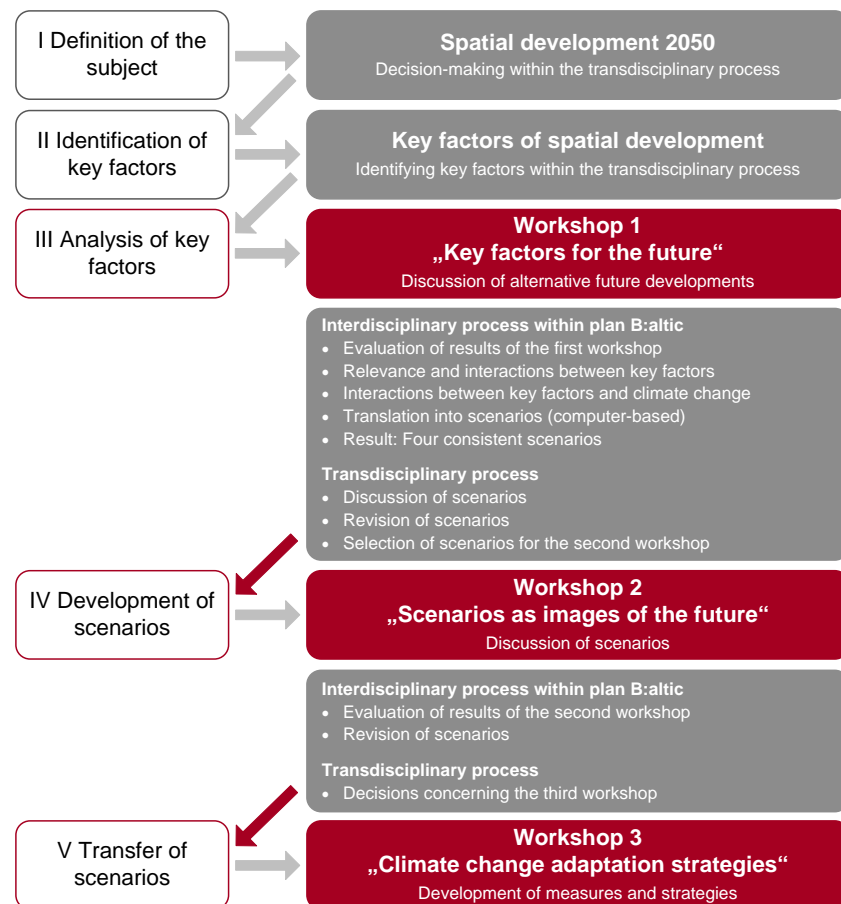


→ 2. plan B:altic and its specific science – practice collaboration

First Scenario-Workshop on climate change and spatial development in Rostock and the suburban-region with a wider participation of stakeholders. Joint analysis of the situation: Which impacts does climate change have on the suburban-region? Discussion of alternative future developments

Second Scenario-Workshop Discussion of scenarios: In which ways could the suburban-region develop?

Third Scenario-Workshop Development of measures and strategies – structural, spatial, behavioural





3. Lessons for an uncertain and eventually surprising future

Challenges:

- Climate change is an important challenge, impacts are felt already now. But: Because of the long-term character of climate change practitioners do not feel immediate urge to act, but: urban planning has long-term consequences
- Climate change impacts interact with ecological and societal developments, integrated analysis difficult due to sectoral organisation of administration – social – ecological interdependencies are neglected now
- Due to twofold complexity (climate change and cities): uncertainty especially difficult to communicate or even to tackle
- Tendency to discuss the most “likely” or the most “desirable” future development



3. Lessons for an uncertain and eventually surprising future

Challenges:

- Uncertainty and potential states of not knowing point on need for local and regional sense-making – planning as political task (and not a technical endeavour only) and related ethical challenges
- Political support for dealing with climate change impacts important



3. Lessons for an uncertain and eventually surprising future

Opportunities:

- The scenario-planning process
 - ... initiated a regional learning process
 - ... contributed to the decision of the “Bürgerschaft” in Rostock to develop a framework concept for climate change adaptation
 - ... made the participation of relevant regional stakeholders possible and strengthen the issue among them
 - ... showed the necessity for climate change adaption now
 - ... exchanged knowledge and new networks have the potential to improve framework conditions in a sustainable way
 -showed that integrative perspectives are possible



3. Lessons for an uncertain and eventually surprising future

- More flexible approaches in spatial planning are dependent on planning law – e.g. open and flexible urban plan which can integrate new knowledge possible in Sweden, but not in Germany
- Use of leitmotifs possible within planning which focus on social-ecological interdependencies, on uncertainty and surprising events (e.g. resilience)
- Crossing of sectors and of administrative scales necessary and : possible

Thank you for your attention!

Sonja Deppisch, Dr.-Ing.

Head of research group plan B:altic

HafenCity University Hamburg

Urban Planning and Regional Development

Winterhuder Weg 31

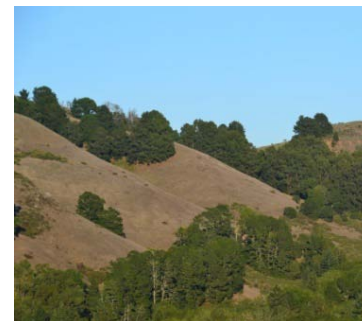
22085 Hamburg, Germany

email: sonja.deppisch@hcu-hamburg.de

phone: 040 - 42827-4508

→ A. Climate change in urban regions : temperature rise

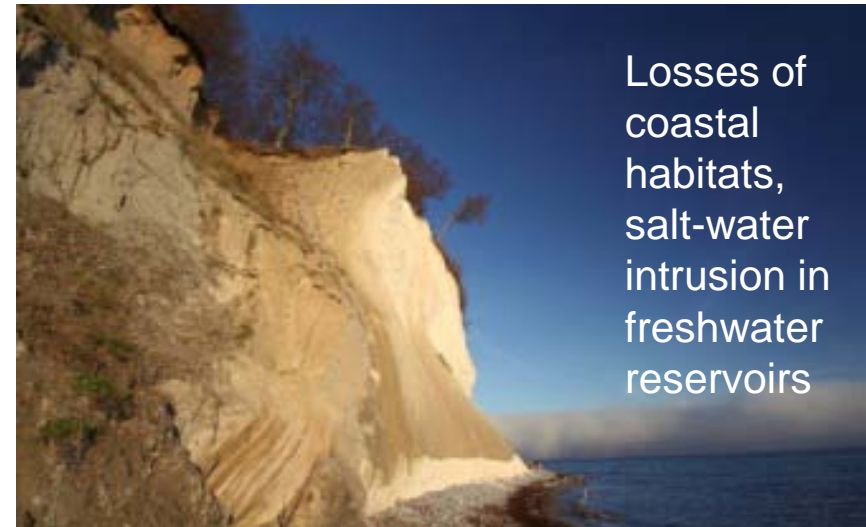
Temperature rise meets urban heat islands, air quality, specific built and open structures and vulnerabilities and could affect:



→ A. Climate change: Sea-level rise and impacts in coastal urban regions



Low-lying urban service infrastructures and related services, transport lines,



Losses of coastal habitats, salt-water intrusion in freshwater reservoirs



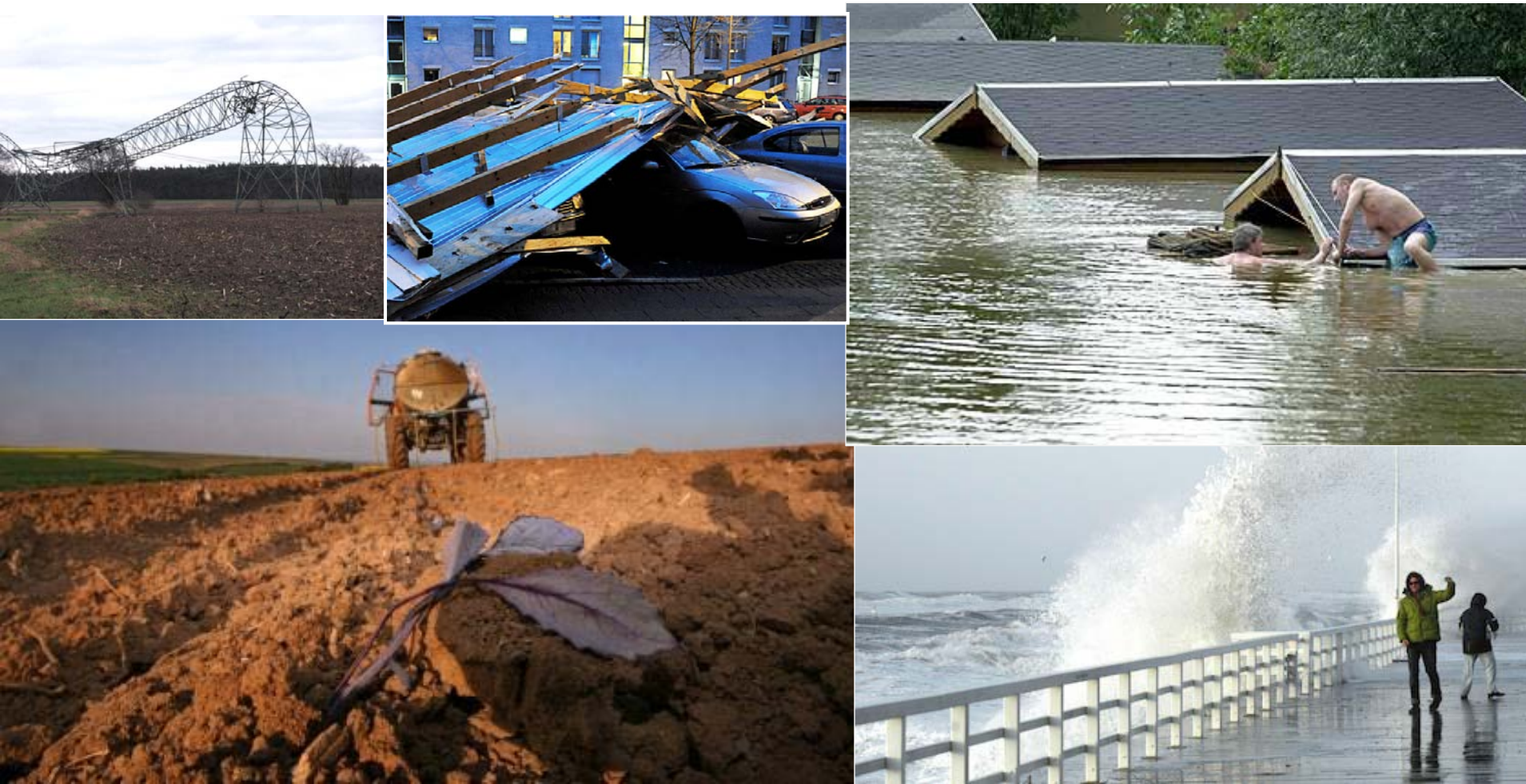
settlement structures, ports, airports



=> Settlement structure and land-use, socio-economic assets, ecosystem services

→ A. Climate change: precipitation patterns and extreme weather events

Droughts, heavy rain events with floods, storms, storm surges with floods



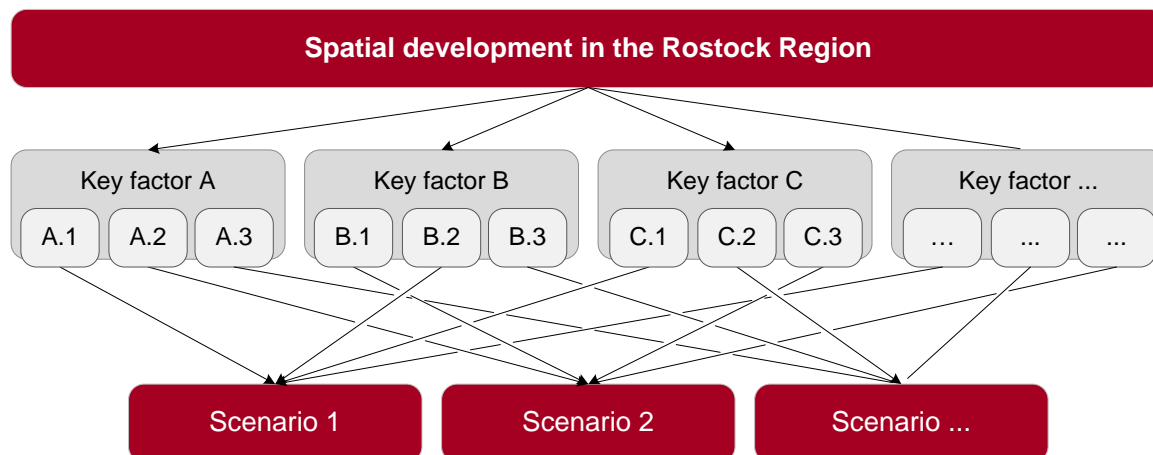


Development of scenarios

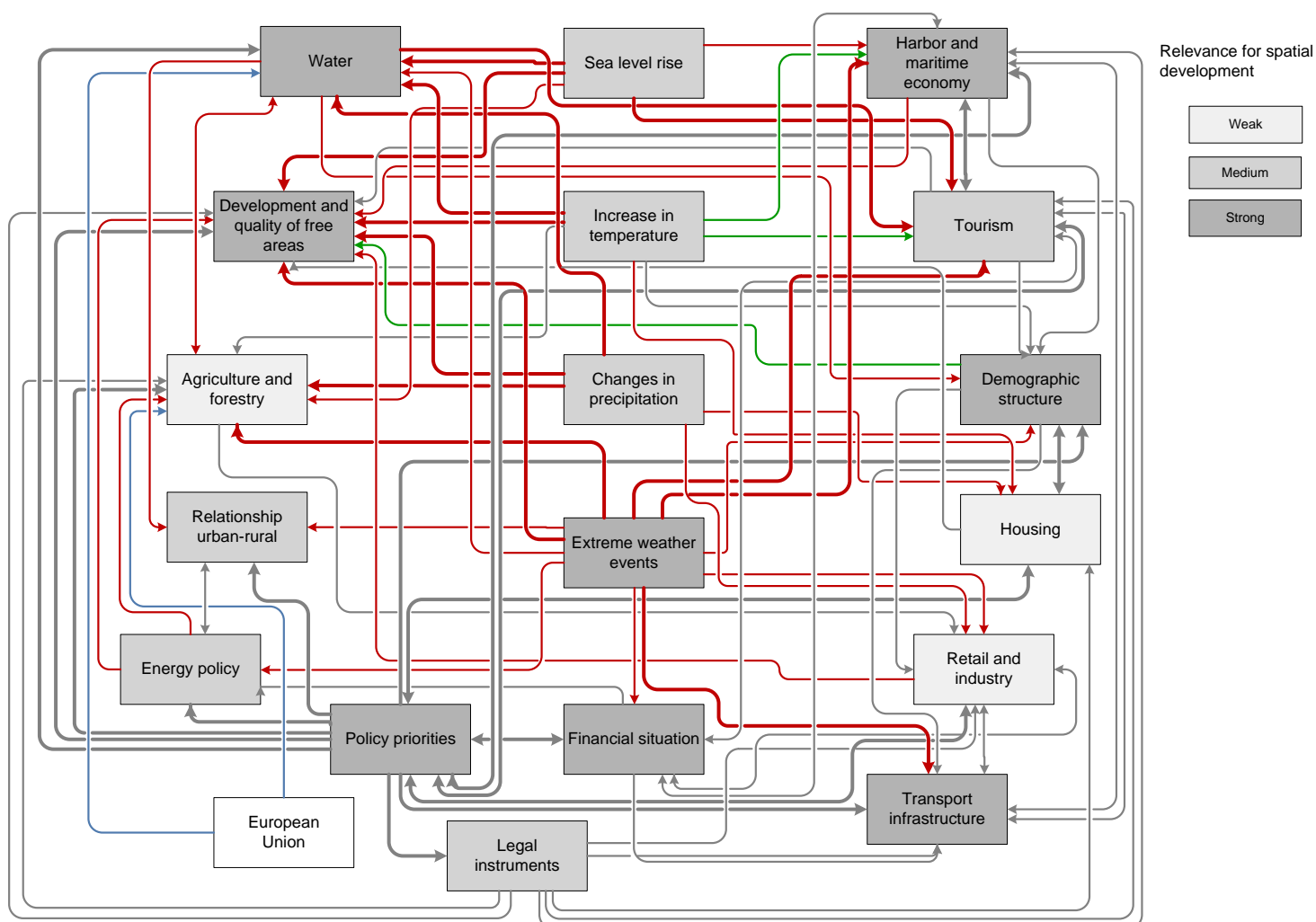


- ➡ interrelationships and importance analysed
- ➡ combined to scenarios of future spatial development

Choice of scenarios by: differentiability, consistency, interpretability, range



Development of scenarios





Four different “images of the future”

